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CONTROL OF DISEASES IN THE HOME LAWN

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Diseases that damage the home lawn can be prevented with minimal effort when one uses available information about disease development and control. There are three factors which work in sequence for disease development to occur. A pathogen must be present in high numbers, environmental factors must be favorable for its development and a susceptible host must be present. Homeowners have some ability to control all of these factors by cultural or chemical means. A discussion of these controls will follow descriptions of individual diseases.

Brown Patch
(Rhizoctonia brown patch)

Brown patch is caused by the fungus *Rhizoctonia solani* and develops with the advent of cool nights and warm days. It occurs most consistently in the fall but may also appear in the spring. Affected patches are brown in color and circular in shape but may become irregular as diseased areas enlarge and merge. They range in size from one foot to as much as 50 feet in diameter.

In addition to circular patterns of brown grass, the disease can also be identified by easily pulling leaves from stolons. This tissue becomes deteriorated and water soaked as a result of the pathogen's activity. Fortunately, stolons are not readily killed and the entire area may become green from new leaf development if the fungus is held in check and the season is long enough.

St. Augustinegrass is damaged more frequently and severely by the brown patch fungus than bermudagrass or zoysiagrass. This fungus is most active when there is abundant moisture and night temperatures dip to 70°F or below and day temperatures are between 75° and 90°F. Fungal activity stops when air temperatures reach 90°F.

Lawns that experience consistently high moisture levels and high nitrogen rates are more prone to brown patch development. By the same token, lawns subjected to low maintenance levels seldom have the disease. Homeowners can maintain an attractive lawn by avoiding extremes in the utilization of water and fertilization. A balanced fertility program and moderation in watering will substantially lessen the potential for brown patch development. Preventive fungicides can be used to avoid damage for limited periods during disease prone seasons. (See fungicide chart.) If certain fungicides seem ineffective due to race differences (of *Rhizoctonia solani*), one should change to another fungicide.

Gray Leaf Spot

Gray leaf spot is a fungal disease that is characterized by light brown spots on leaf blades of St. Augustinegrass. Rapid disease development occurs under conditions of abundant moisture and warm temperatures. It is generally most severe in shaded areas with poor air movement. The disease is also more destructive on newly established or rapidly growing St. Augustinegrass that has received excessive nitrogen fertilization.

In the most severe cases, St. Augustinegrass can be killed or seriously weakened by the gray leaf spot fungus, *Pyricularia grisea*. Where the potential exists for this level of disease development, necessary watering should be done during the day, nitrogen temporarily withheld, and fungicides used to prevent further infection. (See fungicide chart.)

"Helminthosporium" Leaf, Crown and Root Diseases of Bermudagrass

Fungi that cause this condition persist in dead grass tissue and on affected leaves, crowns, roots and rhizomes. When conditions become ideal for disease development, spores are produced in great abundance. These spores then germinate and germ tubes penetrate healthy tissues to start the disease cycle.

Symptoms include leaf spots, blights and crown rots. Disease occurrence is usually irregular and the lawn may appear mottled or blotched. Since bermudagrass leaves are fine in texture, magnification may be necessary to discern spots that are produced on these structures.

Control is best achieved by utilizing both cultural and chemical control techniques. Limiting thatch development and using fungicides during critical periods of disease development permits satisfactory control. (See fungicide chart.)

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Fading Out

Fading out is a condition that occurs during very hot periods of the year when turfgrass is experiencing stress. It may also be referred to as Curvularia blight because of the fungal species (*Curvularia spp.*) associated with the condition. These fungi are considered to be weak pathogens and recommended control procedures are directed toward improving the vigor of turf. The use of a broad spectrum fungicide may give temporary improvement but if the factors contributing to low-vigor are not addressed, no permanent value will be realized.

Turfgrass can be protected against weak pathogens by watering properly, fertilizing according to soil test, mowing at the proper height, and avoiding thatch accumulation. Excessive use of fungicides in a home lawn may contribute to thatch accumulation because they inhibit the development of fungal organisms that decompose thatch.

Fairy Rings

"Fairy ring" gets its name from mushrooms growing in a circular pattern. Ancient mythology ascribed this occurrence to fairies sowing seed as they danced in circles. The condition occurs because a mushroom-producing fungus develops on an underground organic matter source and produces its fruiting structures (mushrooms) on the outer edges. Grass is often greener in the ring area because of available nutrients liberated by decomposition of the fungus.

Control is not recommended because little damage occurs on turfgrass in the southern states. In more northern areas controls may be necessary. Mushrooms should be removed and disposed of when they occur. **They should never be collected for human consumption because of the difficulty in distinguishing between poisonous and non-poisonous mushrooms.**

Pythium Blight

Pythium blight is caused by several species of Pythium which is a water- mold fungus. Infection takes place during wet periods when temperatures are cool (50-65°F). Some species of the fungus are known to attack northern grass species at higher temperatures.

Infected grass rapidly dies in small irregular spots or streaks. Leaves are water-soaked and slimy to the touch. Under the right moisture conditions, one may notice a "cottony" type growth that represents masses of fungal strands. Because of this, some refer to this disease as cottony blight.

Pythium blight is most severe in low, poorly drained areas where air movement is poor and in areas where high-nitrogen fertilization has been practiced. The fungi causing this disease are particularly damaging on newly established seedling stands where they cause "damping-off".

Fortunately, St. Augustinegrass is not affected and most Bermudagrass species possess good tolerance. It is sometimes a problem on highly maintained improved bermudas and on over-seeded grasses mostly on golf courses.

Turf managers who expect Pythium to occur annually should keep effective fungicides on hand to deal with this destructive and rapidly developing disease. Suggested fungicides are listed in the chemical control chart.

Dollar Spot

Dollar spot is caused by fungi (*Lanzia* sp. and *Moellerodiscus* sp.) which attack a variety of grasses. It occasionally occurs on hybrid or fine leafed Bermudagrass but seldom occurs on St. Augustinegrass. It is far more destructive in the mid-west than in the south during the spring and fall when dew is formed on grass blades. Turfgrass which is vulnerable to this problem should be maintained with balanced fertility. Effective fungicides should be used when first disease occurrence is noted. (See fungicide chart.)

Slime Molds

A number of slime molds may develop in turf areas but the most common one is a dark gray to black fungus called *Physarum cinereum*. The sooty-type growth appears overnight on grass blades and rubs off easily on shoes and clothing.

Slime molds derive their nourishment from decaying organic matter in or on the soil surface. Spores move in unison up structures such as leaf blades and accumulate in noticeable patches leaving the impression that someone has applied a foreign substance to the lawn surface. Slime mold fungi do not feed on living plant tissue and chemical control measures are not necessary. One may remove fungal growth with water under pressure.

Smut

Head smut often occurs on common bermudagrass in home lawns and is most noticeable when seed head formation has been stimulated by stress. The disease is caused by the fungus *Ustilago cynodontis* which grows systemically in the plant tissue.

Conventional fungicides do not prevent smut development because they offer surface protection only or are not effective against the fungus. Control should be directed toward the prevention of seed head development through adequate watering and fertilization. Close mowing will remove seed heads when produced.

Rust

Rust occurs on several turfgrass species but causes the greatest damage on zoysiagrass and tall fescue. Both St. Augustinegrass and bermudagrass are af-

fected by rust fungi but disease development is generally not sufficient to be noticeable. Rust is caused by several fungal species (*Puccinia* spp.) that produce orange colored linear pustules containing numerous spores. These spores infect healthy plant tissue under favorable environmental conditions. Affected plants have yellow leaf blades that collectively result in yellow patches in the lawn.

Downy Mildew

Downy mildew occurs on St. Augustinegrass in a sporadic fashion along the Texas Gulf Coast. The fungus causing this disease (*Sclerophthora macrospora*) produces swimming spores that can be transported in running water. The leaves of infected plants have linear grayish streaks that are swollen or raised. Infected plants are less vigorous but are not seriously affected. Seville is the most susceptible variety grown.

Virus

Only one serious virus disease occurs on turfgrass and that is St. Augustine Decline (SAD). This mechanically transmissible virus occurs on St. Augustinegrass and centipedegrass causing leaf mottling and reduced plant vigor. Infected grass thins and grows poorly in heavily shaded areas. It can be maintained but its vigor is reduced in comparison with uninfected grass. Virus particles are efficiently transmitted by lawnmowers from infected to uninfected plants.

The most practical approach to control in St. Augustinegrass is to use a resistant variety. Raleigh, Floratam and Seville are all resistant to the virus. Raleigh is widely adapted and is compatible with most landscape objectives. Floratam is sensitive to winterkill and should not be utilized in the northern growing areas. Seville is susceptible to downy mildew and may develop leaf symptoms where this disease is a problem.

Nematodes

Several species of plant parasitic nematodes affect turfgrass causing irregular patches of weak and stunted plants. This damage is usually more prevalent in sandy soils.

Nematodes are microscopic roundworms that live in soil. Plant parasitic nematodes possess stylet mouthparts which are used to penetrate individual plant cells. Nematodes average about 1/50 inch in length and can build up incredibly large numbers in soil during the growing season. They can be identified by sending soil samples to the Texas Plant Disease Diagnostic Laboratory.

There are currently no nematicides registered for use on home lawns. Balanced fertility programs will help compensate for nematode damage.

NON-PATHOGENIC DISEASES

Iron chlorosis

Iron deficiency causes leaf blades to show yellow areas between veins while veins remain green. This condition should not be confused with St. Augustine Decline (SAD) where mottling of light and dark green areas occur in the leaf. This deficiency symptom usually appears where the soil pH is high (alkaline) around house foundations or in areas of the state where limestone is present in the soil. It can be corrected by applications of iron sulfate or iron chelates. Temporary iron chlorosis may also occur when certain nutrient imbalances exist, especially where excessive phosphate fertilizers are used.

Soil compaction

Certain soils are compacted easily, especially in areas of heavy foot traffic or where automobiles are parked. Soil compaction prevents adequate gas exchange, moisture penetration and nutrient movement. Sidewalk or driveway construction in appropriate areas usually removes the problem. Soil aeration with specialized equipment may also be appropriate.

Dog urine injury

Circular spots 8 to 10 inches in diameter may appear in areas frequented by female dogs. Heavy watering helps correct this condition.

Fertilizer burn

Commercial fertilizers are salts and can "burn" grass when applied excessively. This condition is most often seen where fertilizers were spilled.

Herbicide injury

Herbicides are sometimes sold in a mixture with fertilizers. Damage is sometimes noted on shrubs, trees and ornamentals where soil leaching has occurred.

Fungicide Recommendations

Fungicides should be used in combination with cultural control practices to prevent disease development. They should be used only when needed and should always be applied according to label recommendations. No chemical inhibits all disease organisms so correct diagnosis is critical to proper chemical selection. The following chart suggests chemicals that have been found effective in controlling specific turf pathogens.

Chemicals are listed in this publication for informational purposes only and the mention of products does not guarantee or warrant the standard of products, nor does it imply approval of any product to the exclusion of others which may be equally suitable.

Plant Disease Diagnosis

The Texas Plant Disease Diagnostic Laboratory processes plant samples for the purpose of making positive identifications. Homeowners may take advantage of this service by packaging and mailing a selected sample that expresses a range of disease symptoms. There is a charge of $10.00 per sample and checks should be made payable to The Texas Agricultural Extension Service. Address the sample to:

Texas Plant Disease Diagnostic Laboratory
Room 101, L. F. Peterson Bldg.
Texas A&M University
College Station, TX 77843

MATERIALS FOR DISEASE CONTROL

Chemical	Trade Name and Formulation	Brown Patch	Helmintho-sporium	Gray leaf Spot	Pythium Blight	Rust	Fading-out	Dollar Spot	Downy Mildew
Triadimefon	Bayleton	X				X		X	
Benomyl	Tersan 1991*	X						X	
Chlorothalonil	Daconil 2787	X	X	X		X	X	X	
Mancozeb	Fore	X	X	X		X	X	X	
	Manzate 200	X	X			X	X	X	
PCNB	Terraclor (10G) (2E)	X	X						
Etridiazole	Koban				X				
Metalaxyl	Subdue				X				X
Propiconazole	Banner	X				X		X	
Iprodione	Chipco 26019	X	X					X	
Fenarimol	Rubigan	X						X	
Propamocarb Hydrocloride	Banol				X				
Thiophanate methyl	Topsin M or Fungo 50	X						X	
Thiophanate methyl plus Mancozeb	Duosan	X	X			X		X	

* The Tersan 1991 label recommends that this product be used in combination with certain other fungicides to prevent the development of chemically resistant fungi.

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